

U.S. Patent Application No. 09/778,220

**AMENDMENT**

**In the Claims**

Please amend Claims 1, 5-20, and 22-27 to read as shown below.

1. (Currently Amended) A method for supporting the efficient transfer of baggage from an inbound flight to connecting flights, comprising the steps of:

identifying an inbound flight to a software module operating on a server computer in a distributed computer network;

retrieving data concerning the baggage from databases logically connected to the distributed computer network and providing the data to the software module at the server computer;

operating the software module at the server computer to calculate a plurality of costs cost value for each of a plurality of potential assignments for baggage transfer from the data and to select a most efficient selecting an assignment from the plurality of costs of potential assignments by saving one of the plurality of potential assignments with the lowest cost value as the selected assignment;

operating the software module at the server computer to calculate a total distance value for each of a plurality of potential routes for completing the most efficient selected assignment from the data and to select selecting a most efficient route from the plurality of potential routes by saving one of the plurality of potential routes with the shortest total distance value as the selected route;

electronically distributing over a wireless network the most efficient selected assignment and most efficient selected route from the server to a plurality of clients in communication with the distributed computer network; and

delivering baggage to a gate of one or more connecting flights according to the most efficient assignment and most efficient route.

2. (Original) The method of claim 1, further comprising the step of notifying the software module operating on the server computer that tugs are available for delivering the baggage.

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3. (Previously Amended) The method of claim 1, wherein the step of identifying an inbound flight comprises the steps of:

notifying a dispatch client of an inbound flight number for the inbound flight; and  
transmitting the inbound flight number from the dispatch client to the software module operating on the server.

4. (Previously Amended) The method of claim 1, wherein the step of retrieving data from databases logically connected to the distributed computing environment comprises the steps of:

requesting flight data from a flight performance evaluation system;  
if the flight data is not available in the flight performance evaluation system, requesting the flight data from an operations support system;  
requesting passenger data and baggage data from a passenger information distribution system; and  
if the passenger and baggage data is not available in the passenger information distribution system, requesting the passenger and baggage data from a reservation system.

5. (Currently Amended) The method of claim 1, wherein the step of calculating a cost value for each of the plurality of costs of potential assignments to select the ~~most efficient~~ assignment comprises the steps of:

defining desired driver, baggage, and stop parameters for determining the ~~most efficient~~ assignment; and  
~~creating~~ determining the plurality of ~~costs~~ of potential assignments from combinations of assignments for baggage transfer.

6. (Currently Amended) The method of claim 1, wherein the step of calculating a cost value for each of the plurality of costs of potential assignments to select the ~~most efficient~~ assignment further comprises the ~~steps~~ step of ~~[[:]]~~

~~saving one of the plurality of costs of potential assignments with the lowest cost as the most efficient assignment; and~~

presenting the ~~most efficient~~ selected assignment to ~~[[the]]~~ a dispatch client.

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7. (Currently Amended) The method of claim 1, wherein the ~~most efficient~~ selected assignment comprises one or more assignments providing for the transfer of all connecting baggage from an inbound flight.

8. (Currently Amended) The method of claim 5, wherein the step of determining the plurality of potential assignments from combinations of assignments comprises the steps of:  
 identifying all zones of an airport concourse to which baggage must be delivered;  
 identifying the zone of the inbound flight as the starting zone;  
 either adding zones to the starting zone to create an assignment or considering the starting zone a complete assignment; and  
 creating additional assignments comprising either single zones or combinations of zones.

9. (Currently Amended) The method of claim 5, wherein the step of determining the plurality of potential assignments from combinations of assignments further comprises the step of eliminating one or more of the plurality of ~~costs~~ of potential assignments that exceed driver, baggage or stop parameters.

10. (Currently Amended) The method of claim 1, wherein the cost value for each of the plurality of ~~costs~~ of potential assignments is defined by the calculation of:  $(\text{number of drivers}) * (\text{driver cost}) + \max(\text{num. bags} - \min(\text{num. bags})) * (\text{balance cost}) + (\text{num. of same side zones not kept together}) * (\text{pair cost}) + \text{SIGMA. assignments } ((\max(\text{num. of bags, target num. of bags}) - (\text{target num. of bags}))^2 * (\text{bag cost}) + ((\text{target num. of bags} - \min(\text{num. bags, target num. of bags})) * (\text{bag cost}) + (\max(\text{target num. of stops, num. of stops}) - \text{target num. of stops}) * (\text{stop cost})).$

11. (Currently Amended) The method of claim 1, wherein the step of calculating the total distance value for each of the plurality of potential routes for completing the selected assignments assignment comprises the steps of:

~~creating~~ determining the plurality of potential routes from combinations of routes to complete the selected assignment; and

calculating the total distances between each gate of each connecting flight for each of the plurality of potential routes.

12. (Currently Amended) The method of claim 1, wherein the step of calculating the total distance value for each of the plurality of potential routes for completing the selected assignments assignment further comprises the steps of[:]  
~~saving the plurality of potential routes with the shortest total distance as the most efficient route; and~~  
 presenting the ~~most efficient~~ selected route to the dispatch client.

13. (Currently Amended) The method of claim 11, wherein the step of ~~creating~~ determining the plurality of potential routes from combinations of routes further comprises the steps of:

identifying close connecting flights departing shortly after the arrival of the inbound flight;

if there are close connecting flights, beginning potential route sequences at a gate of one of the close connecting flights; and

if there are no close connecting flights, beginning potential route sequences at a gate of the inbound flight.

14. (Currently Amended) The method of claim 1, wherein the ~~most efficient~~ selected route comprises a sequence of all of the identified gates of connecting flights to which baggage must be delivered.

15. (Currently Amended) The method of claim 13, wherein the step of ~~creating~~ determining the plurality of potential routes from combinations of routes further comprises the steps of:

identifying all gates of connecting flights to which baggage must be delivered and each gate's corresponding coordinates;

defining a starting gate of the route sequence at a last one of the close connecting flights, or if no close connecting flights, at the inbound flight gate;

adding identified gates within the same zone as the starting gate to the routing solution;

adding the remaining identified gates; and

repeating the foregoing steps for various sequences of identified gates to create the ~~possible routing solutions~~ potential routes.

16. (Currently Amended) The method of claim 11, wherein the step of calculating the total distance value ~~distances~~ for each of the plurality of potential routes is based upon coordinates assigned to each gate.

17. (Currently Amended) The method of claim 1, wherein the plurality of clients receiving the ~~most-efficient~~ selected assignment and ~~most-efficient~~ selected route from the server over a wireless network are tug clients mounted on tugs operated by baggage handlers.

18. (Currently Amended) The method of claim 1, wherein the step of delivering baggage according to the ~~most-efficient~~ selected assignment and ~~most-efficient~~ selected route comprises the steps of:

completing the ~~most-efficient~~ selected assignment by baggage handlers according to the ~~most-efficient~~ selected route;

notifying the software module on the server computer via tug clients when baggage handlers have completed the ~~most-efficient~~ selected assignment; and

sending a new ~~most-efficient~~ selected assignment and a new ~~most-efficient~~ selected route from the server computer to the tug clients over the wireless network.

19. (Currently Amended) The method of claim 18, wherein the step of delivering baggage according to the ~~most-efficient~~ selected assignment and ~~most-efficient~~ selected route further comprises the steps of:

sending updated flight data to the software module; and

notifying tug clients of updated flight data.

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20. (Currently Amended) A method for supporting the efficient transfer of items from an inbound conveyance to at least one outbound conveyance, comprising the steps of:

identifying the inbound conveyance;

retrieving item data describing the destination of the items on the inbound conveyance;

~~formulating~~ calculating a cost value for each of a plurality of ~~eests~~ of potential assignments for transferring the items from the item data in order to select a most efficient and selecting an assignment from the plurality of potential assignments by saving one of the plurality of potential assignments with the lowest cost value as the selected assignment;

~~formulating~~ calculating a distance value for each of a plurality of potential routes for completing the most efficient ~~selected~~ assignment from the item data in order to select and selecting a most efficient route from the plurality of potential routes by saving one of the plurality of potential routes with the shortest total distance value as the selected route; and

transferring the items from the inbound conveyance to the outbound conveyance according to the ~~most efficient~~ selected assignment and ~~most efficient~~ selected route.

21. (Previously Amended) The method of claim 20, wherein the step of identifying the inbound conveyance comprises the step of notifying a dispatcher responsible for managing the transfer of items that the inbound conveyance is approaching.

22. (Currently Amended) The method of claim 20, wherein the step of ~~formulating~~ calculating a cost value for each of the [[a]] plurality of ~~eests~~ of potential assignments for transferring the items comprises the steps of:

defining desired parameters for determining the ~~most efficient~~ selected assignment; and

~~creating~~ determining the plurality of ~~eests~~ of potential assignments from combinations of assignments for transferring the items.

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23. (Currently Amended) The method of claim 20, wherein the step of ~~formulating~~ calculating a distance value for each of a plurality of potential routes for completing the ~~most efficient selected assignment assignments~~ comprises the steps of:

~~creating~~ determining the ~~[[a]]~~ plurality of potential routes from combinations of routes;  
and

calculating the total distances for each of the plurality of potential routes.

24. (Currently Amended) The method of claim 23, wherein the step of calculating the total distances for each of the plurality of potential routes is based upon coordinates assigned to each stop on the potential route.

25. (Currently Amended) The method of claim 20, wherein the step of transferring the items from the inbound conveyance to the outbound conveyance according to the ~~most efficient selected assignment and most efficient selected~~ selected route comprises the steps of:

distributing the ~~most efficient selected~~ selected assignment and ~~most efficient selected~~ selected route that direct how the items are to be transferred;

completing the ~~most efficient selected~~ selected assignment according to the ~~most efficient selected~~ selected route; and

distributing a new ~~most efficient selected~~ selected assignment and a new ~~most efficient selected~~ selected route for the transfer of items from a new inbound conveyance.

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26. (Currently Amended) A computer implemented system for supporting the transfer of baggage from inbound conveyances to connecting conveyances comprising:

a central computer system comprising a plurality of databases operable for managing traveler processes and transmitting passenger data, baggage data, and flight data;

a server computer connected to the central computer system comprising an electronic dispatch software module configured to calculate a plurality of potential baggage assignments and routes based on the passenger data, baggage data, and flight data by calculating a cost value for each of a plurality of potential baggage assignments for transferring the baggage from inbound conveyances to connecting conveyances and selecting a baggage assignment from the plurality of potential baggage assignments by saving one of the plurality of potential baggage assignments with the lowest cost value as the selected assignment and to calculate a plurality of potential routes based on the passenger data, baggage data, and flight data by calculating a distance value for each of a plurality of potential routes for completing the selected assignment from the item data and selecting a route from the plurality of potential routes by saving one of the plurality of potential routes with the shortest total distance value as the selected route;

at least one tug client, comprising a computer mounted on a motorized baggage vehicle and operable by a baggage handler, configured for receiving to receive the selected baggage assignments assignment and the selected routes route from the server computer via a wireless network, presenting present the selected baggage assignments assignment and the selected routes route to [[a]] the baggage handler, and transmitting transmit messages to the server computer via the wireless network; and

at least one dispatch client operable by a dispatcher and configured for receiving to receive the selected assignments assignment and selected routes route from the server computer via the wireless network and distributing distribute them the selected assignment and selected route to the tug clients via the server computer via the wireless network.



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27. (Currently Amended) The system of claim 26, further comprising:  
a passenger information distribution system connected to the server computer and operable for transmitting passenger and baggage data to the server computer; and  
a flight performance evaluation system connected to the server computer and operable for transmitting flight data to the server computer; and  
~~the electronic dispatch software module, wherein the electronic dispatch software module is configured to manipulate the passenger, baggage, and flight data to generate a plurality of potential assignments and routes.~~

28. (Previously Amended) The system of claim 26, further comprising a flight information display system operable for notifying a dispatch client of inbound flight information.

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